

POL 5101

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office

Effective Date: 07-01-1999

References: Chapter 173-175 WAC
Dam Safety Guidelines

Revised:

DESIGNATION OF STATE DAM SAFETY OFFICE

POLICY STATEMENT:

The Dam Safety unit within the Operations Support Section of the Water Resources Program shall be designated as the "State Dam Safety Office" in official correspondence, reports and guidelines, as the official representative of the Department of Ecology and the State of Washington in dam safety issues. This designation shall replace "Dam Safety Section" or "Dam Safety Team" utilized in the Dam Safety Guidelines and in previous reports and correspondence. The unit supervisor for the dam safety office shall be referred to in these policies as the Dam Safety Office Supervisor.

Keith E. Phillips
Program Manager
Water Resources Program

Special Note: These policies and procedures are used to guide and ensure consistency among water resources program staff in the administration of laws and regulations. These policies and procedures are not formal administrative regulations that have been adopted through a rule-making process. In some cases, the policies may not reflect subsequent changes in statutory law or judicial findings, but they are indicative of the department's practices and interpretations of laws and regulations at the time they are adopted. If you have any questions regarding a policy or procedure, please contact the department.

POL 5102

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064

Revised: 07-01-1999

RCW 86.16.035

RCW 90.03.350

WAC 508-12-280 through 410 (repealed 07-01-92)

Chapter 173-175 WAC

APPLICABILITY OF DAM SAFETY POLICIES AND PROCEDURES

POLICY STATEMENT:

Existing Statutes, Rules, and Policies regarding matters of dam safety are to be applicable to dams which are constructed with a potential active capacity to store 10 acre-feet or more of water as measured at the dam crest elevation. Active storage refers to water stored above natural ground level which could be released by a failure of the impounding barrier. The 10 acre-feet threshold applies to dams which can, or will, actively impound water on either a permanent or temporary basis.

DSO Jurisdiction extends to any dam which can or does contain water of any quality, or any substance containing sufficient water to exist in a liquid or slurry state at the time of initial containment. The Dam Safety Office will become involved with dams of less than 10 acre-feet potential active capacity only when there is a clear and imminent threat to human life.

Those transportation facilities which cross watercourses and which have been, or will be, modified with the intention of impounding water on an intermittent or permanent basis shall be subject to these policies. These policies do not apply to transportation facilities such as roads, highways or rail lines which cross watercourses and exist solely for transportation purposes rather than for impounding water, and which are regulated by other governmental agencies.

These policies do not apply to dikes or levees constructed adjacent to or along a watercourse for protection from natural flooding or for purposes of floodplain management.

These policies do not apply to concrete or steel water storage tanks.

DISCUSSION:

Those statutes which do identify a jurisdictional threshold for dams, reference a volume of 10 acre-feet of water. Accordingly, the 10 acre-feet jurisdictional threshold was formalized in WAC 173-175-020(1) and is to be applied to all dam safety activities.

This policy also identifies jurisdiction for structures which are constructed for the intended purpose of impounding water. Other barriers, such as those intended solely for

use as roadfills and railroad crossings, would rightly fall under the jurisdiction of a transportation agency.

Water storage tanks used for holding domestic water supplies do not constitute dams in the normal interpretation of the term "dam". Tanks which are large enough to store 10 acre-feet of water are usually located in large metropolitan areas, with professionally managed water utilities. Construction within the city limits normally means that engineering review for structural safety will be conducted by the County or City public works department, with inspection and maintenance by the water utility. It is therefore deemed inappropriate for the Dam Safety Office to have redundant review and oversight on a project which can only be considered a "dam" by the broadest interpretation of the statutes.

In an emergency situation, authority vested in RCW 43.21A.064 and 86.16.035 would allow Ecology to intercede on smaller projects that store less than 10 acre-feet in situations where there is an imminent threat to human life.

Keith E. Phillips
Program Manager
Water Resources Program

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POL 5103

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064

Revised: 07-01-1999

RCW 86.16.035

RCW 93.03.350

Chapter 173-175 WAC

APPLICABILITY OF POLICIES TO DAMS WHICH ARE FEDERALLY OWNED

POLICY STATEMENT:

Functions of the Dam Safety office related to engineering review and approval of construction plans and specifications, construction inspection and periodic inspection will not generally be applied to dams that are, or will be, owned by an agency of the Federal government, provided that agency has oversight on operation and maintenance and has an adequate dam safety program for periodic inspection and repair of completed projects. Federally owned dams not meeting the above criteria are subject to state statutes, rules and these policies.

The DSO will continue to be the state repository for pertinent plans, reports, and other documents related to safety of the federal dams. In addition, the DSO will coordinate with the Bureau of Reclamation and the Corps of Engineers dam safety programs, and may accompany and assist them on inspections when invited. Finally, the DSO will provide technical expertise and assistance to the State Emergency Management Division in the event of an emergency at a Federally owned dam.

DISCUSSION:

This is a direct implementation of WAC 173-175-020(3). Exemption under this policy is intended to apply primarily to dams owned and operated by the U.S. Army Corps of Engineers and Bureau of Reclamation. Both agencies have full time engineering staff responsible for dam safety activities.

There are a number of Federal agencies which own dams and which have minimal or no dam safety program. The DSO will continue to apply state statutes, rules and policies to these projects. This approach places a priority on providing public safety regardless of issues related to state/federal jurisdiction.

Keith E. Phillips
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Water Resources Program

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POL 5104

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064

Revised: 07-01-1999

RCW 43.21A.068

RCW 86.16.035

RCW 90.03.350

WAC 508-12-280 through 410 (Repealed 07-01-92)

Chapter 173-175 WAC

APPLICABILITY OF POLICIES TO NONFEDERAL DAMS WHICH ARE LICENSED OR EXEMPTED FOR HYDROPOWER BY THE FEDERAL ENERGY REGULATORY COMMISSION (FERC)

POLICY STATEMENT:

Application of policies to non-federal hydropower dams, licensed or exempted by the Federal Energy Regulatory Commission (FERC), shall be consistent with the provisions of RCW 43.21A.068.

Specifically, the DSO will not review and approve construction plans and specifications, charge plan review fees, or conduct construction or periodic inspections of these projects.

The DSO will continue to be the state repository for pertinent plans, reports, and other documents related to FERC or hydropower dams.

Keith E. Phillips
Program Manager
Water Resources Program

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POL 5105

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office

Effective Date: 06-01-93

References: RCW 43.21A.064

Revised: 07-01-1999

RCW 86.16.035

RCW 90.03.350

Chapter 173-175 WAC

EXEMPTION OF DAMS WHICH ARE 6 FEET OR LESS IN HEIGHT

POLICY STATEMENT:

Dams which impound more than 10 acre-feet, but are 6 feet or less in height, as measured from the downstream toe to the dam crest, may be exempted from these policies and from regulation under Chapter 173-175 WAC, by the DSO. An exemption may be granted by the DSO for a dam whose failure is not judged to pose a risk to human life and minimal property damage would be expected (Downstream Hazard Class 3). Further, it must be judged by the DSO that there is essentially no reasonable chance that future development will alter the downstream hazard setting.

DISCUSSION:

Dams 6 feet or smaller in height rarely pose a significant threat to life or property in the event of a failure. A dam may be exempted where it is reasonable to expect that either there is no reasonable chance for future downstream development, or the topographic setting is such that there will be essentially no chance for loss of life. Consideration of future development is important in order to avoid the situation where a dam is exempted today and then later the exemption must be rescinded due to downstream development.

The 6 feet threshold is consistent with federal guidelines and many other state dam safety programs.

Keith E. Phillips
Program Manager
Water Resources Program

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Resource Contact: Dam Safety Office

Effective Date: 06-01-93

References: RCW 43.21A.064
RCW 86.16.035
RCW 90.03.350
Chapter 173-175 WAC

Revised: 07-01-1999

MULTIPLE SMALL DAMS IN SERIES

POLICY STATEMENT:

Applicability of dam safety statutes, rules and policies to multiple small dams in a series on a watercourse, whether owned by a single party, or separately owned, where one or more of the dams are less than 10 acre-feet in storage capacity, is governed by one of four cases:

Case 1 - Low Downstream Hazard Setting - All dams store less than 10 acre-feet

A dam with a low downstream hazard which stores less than 10 acre-feet of water at dam crest elevation is not subject to dam safety statutes, rules and policies even when the dam is one of a series of dams on a watercourse where cumulatively, the group of dams store more than 10 acre-feet. (See also POL 5105 regarding dams less than 6 feet in height)

In the case of multi-cell waste storage lagoons, where each individual cell stores less than 10 acre-feet, but the total volume exceeds 10 acre-feet, an exemption from WAC 173-175 will be granted by the DSO only if all of the following conditions are met.

1. The embankments surrounding the cells must have the same crest elevation, and
2. The cells cannot be hydraulically connected by any low level pipe(s), unless the pipe is provided with some sort of control valve, and
3. The lagoon must have a low downstream hazard classification.

Case 2 - Low Downstream Hazard Setting - One or more small dams in a series store less than 10 acre-feet

Those dams which: have low downstream hazard settings; are elements of a series of dams on a watercourse; and which store less than 10 acre-feet of water; are not subject to dam safety statutes, rules and policies.

Those dams which store greater than 10 acre-feet at dam crest elevation are subject to dam safety statutes, rules and policies (WAC 173-175-020).

Case 3 - Significant or High Downstream Hazard Setting - One or more small dams in a series store less than 10 acre-feet

In the situation where the failure of one or more small dams in series (less than 10 acre-feet in storage capacity) could, by itself or by failure of other dams, pose a significant threat to human life, the Dam Safety unit supervisor will make a judgement to determine

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which dams of the series are to be subject to dam safety statutes, rules and policies. The controlling factor in that decision will be the need to reasonably assure safety to human life.

If a project proponent or opponent disagrees with the DSO downstream hazard classification for the project, as described by WAC 173-175-130(4g), the burden of proof in changing the classification will be on the project proponent or opponent.

DISCUSSION:

Multiple small dams in a series pose a variety of problems in applying the 10 acre-feet jurisdictional threshold criteria.

In accordance with RCW 90.03.350, WAC 173-175-020(1) and POL 5102, individual dams which store less than 10 acre-feet of water are exempt from dam safety statutes, rules and policies.

However, there are situations where small dams constructed in a series or in a multi-cell lagoon configuration can cumulatively store greater than 10 acre-feet of water and pose a hazard to human health or safety.

This policy is intended to provide consistency of application for multiple dams while focusing on the primary statutory directive - to reasonably secure safety to human life. In the situation (Case 3) where a dam failure or multiple failures would pose a significant threat to human life, the DSO supervisor has authority to determine applicability of dam safety statutes, rules and policies which are in the best interests of public safety.

Keith E. Phillips
Program Manager
Water Resources Program

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Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 90.03.350
Chapter 173-175 WAC
Dam Safety Guidelines

Revised: 07-01-1999

ISSUANCE OF CONSTRUCTION PERMIT

POLICY STATEMENT:

A construction permit will be issued for construction of a new dam or modification of an existing dam after the following actions are satisfactorily completed:

- Engineering design reports and associated information, as required by WAC 173-175-130, have been submitted and reviewed.
- The construction plans and specifications have been developed in accordance with WAC 173-175-140 and have been found to conform to accepted engineering practice and guidance/requirements contained in the *Dam Safety Guidelines*.
- The construction permit fee has been paid.
- The construction inspection plan has been developed in accordance with WAC 173-175-170 and has been accepted.
- The project proponent has complied with the State Environmental Policy Act.

DISCUSSION:

This policy is a direct implementation of the requirements of RCW 90.03.350 and Part Two of Chapter 173-175 WAC. It designates a "Project Leader" within the DSO to be responsible for ensuring that all actions required in the applicable RCW's, WAC's and SEPA process have been met, before the dam construction permit is issued.

PROCEDURES:

A professional engineer will be designated by the DSO Supervisor to be "Project Leader" and to be responsible for managing all DSO engineering and administrative tasks. The authority and responsibilities of the project leader are described in detail below and listed on the attached checklist.

The project leader will be responsible for:

- All DSO related administrative matters.
- External contact for correspondence, meetings and coordination with project proponent, interested parties, and engineering consultants.

- Internal coordination with all Ecology sections/units associated with the project, including SEPA.
- External coordination with state agencies and other governmental units.
- Coordinating section engineering review of plans and specifications.
- Coordinating section review of construction inspection plan.
- Collection of construction permit fees
- Issuing the construction permit
- Coordinating the DSO construction inspection activities
- Confirming acceptability of the Operation and Maintenance (O&M) plan
- Where appropriate, coordinating with local emergency service officials to confirm acceptability of Emergency Action Plan (EAP)
- Review of construction records summary
- Authorizing commencement or resumption of project operation

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Water Resources Program

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POL 5202

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office
References: RCW 90.03.350
Chapter 173-175 WAC
Dam Safety Guidelines

Effective Date: 07-01-91
Revised: 07-01-1999

ENGINEERING APPROVAL OF CONSTRUCTION PLANS AND SPECIFICATIONS

POLICY STATEMENT:

Approval of construction plans and specifications by the DSO will be based on conformance of the plans and specifications with accepted engineering and construction practice and with criteria contained within the *Dam Safety Guidelines*.

DISCUSSION:

Direct implementation of RCW 90.03.350, WAC 173-175-160.

PROCEDURES:

Two copies of the construction plans and specifications must be submitted by the project proponent. The professional engineer designated by the DSO Supervisor as "Project Leader" will be responsible for coordinating and managing the engineering review of construction plans and specifications for a given project.

Construction plans and specifications which have been found, in the judgement of the project leader, to be in conformance with accepted engineering practice, Chapter 173-175 WAC and the *Dam Safety Guidelines* will be stamped with the DSO "Approved for Construction" Stamp.

One copy of the approved construction plans and specifications will be returned to the owner or his/her designated agent, along with the construction permit (see POL 5201). The other copy of the approved construction plans and specifications will be retained in the DSO files as a permanent record.

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Program Manager
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POL 5203

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 90.03.350

Revised: 07-01-1999

RCW 90.03.470(8,9)

WAC 508-12-280 through 410 (repealed 07-01-92)

Chapter 173-175 WAC

ASSESSMENT AND COLLECTION OF FEES FOR ENGINEERING REVIEW OF CONSTRUCTION PLANS AND SPECIFICATIONS AND FOR CONSTRUCTION INSPECTIONS

POLICY STATEMENT

Fees for review of construction plans and specifications and for construction inspections will be assessed in accordance with procedures contained within Part Three of Chapter 173-175 WAC.

Time accounting methods contained in the DSO computer Database will be used to track actual expenditures of staff time on plan review and analysis, site inspections, correspondence and meetings.

Adjustments will be made to the fee schedule by amendment of the WAC when necessary to compensate for inflation and/or to more accurately reflect actual costs of plan review and construction inspection.

PROCEDURES:

Assessment and collection of fees will be accomplished in accordance with Part Three of Chapter 173-175 WAC.

Fees received from project proponents will be processed in accordance with established Ecology fiscal policies.

Time accounting information will be maintained in a database for use in tracking specific projects and time expended.

The dam construction permit and plan approval will not be granted until the required fees have been paid.

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POL 5204

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office
References: RCW 90.03.350
Chapter 173-175 WAC

Effective Date: 07-01-91
Revised: 07-01-1999

PLAN REVIEW REQUIREMENTS FOR CONSTRUCTION CHANGE ORDERS

POLICY STATEMENT:

Construction change orders are changes to the construction plans and specifications originally agreed to by the successful bidder for a project. Engineering plan review will be required for those construction change orders which, in the opinion of the DSO, represent a significant modification to the originally approved plans and specifications associated with elements of the project that could have an affect on structural integrity or safe operation of the project. Change orders which could affect project safety must be reviewed and approved by the DSO before implementation.

DISCUSSION:

This is a direct implementation of WAC 173-175-190. Oftentimes during project construction, a variety of problems or changed conditions are encountered which render the original plans inappropriate or impractical. Construction change orders are used by the engineering consultant to implement these plan changes. Construction change orders are considered to be an extension of the plan review process under RCW 90.03.350.

PROCEDURES:

Dam owners or their engineering consultant(s) are required to advise the DSO of the need for a specific change in plans and/or specifications. The DSO will determine if the proposed change could affect project safety and if review and approval by the DSO project leader is required. No action is to be taken by the owner to execute the construction change order until approval is given by the department. A decision to approve or deny the change order will be issued in a letter to the project proponent and/or project engineer.

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Program Manager
Water Resources Program

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POL 5205**WATER RESOURCES PROGRAM POLICY**

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064
RCW 90.03.350
Chapter 173-175 WAC

Revised: 07-01-1999

REVIEW OF CONSTRUCTION PLANS AND SPECIFICATIONS RECEIVED AFTER PROJECT CONSTRUCTION**POLICY STATEMENT:**

Construction plans and specifications which are received for DSO review after project construction will not be endorsed by the DSO "Approved for Construction" Stamp, nor will they be signed by the DSO project leader. Construction of a facility without prior plan approval is a violation of RCW 90.03.350, and the issues of structural integrity and project safety will be addressed according to provisions of WAC 173-175-620(2) and policies POL 5405 and 5406.

DISCUSSION:

Placement of the DSO Plan Approval stamp and signature by a DSO professional engineer on a set of plans constitutes an agency endorsement that the proposed design and method of construction should result in acceptable structural integrity and safety of the project. That endorsement cannot be given "after the fact" because DSO engineers have not had the opportunity to observe the construction of the project, and to field verify the assumptions made during the design and development of the construction plans and specifications.

Construction Inspections by the DSO are a mandatory part of the approval process. No amount of review of as-built plans can substitute for construction inspection as a means of verifying conformance with accepted engineering design and construction standards.

PROCEDURES:

No Plan Approval will be issued nor plan review fees charged for the original construction work which was conducted illegally. However, regulatory orders may be issued and fines may be levied as described in WAC 173-175-620(2a). Safety issues will be resolved in accordance with procedures contained in WAC 173-175-620(2) and policies POL 5405 and 5406.

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POL 5206

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office

Effective Date: 06-01-93

References: RCW 90.03.350
Chapter 173-175 WAC
Chapter 197-11 WAC

Revised: 07-01-1999

SEPA COMPLIANCE AS RELATED TO ISSUANCE OF CONSTRUCTION PERMIT

POLICY STATEMENT:

The timing of the issuance of the Dam Construction Permit relative to completion of the State Environmental Policy Act (SEPA), is governed by WAC 197-11-070(1).

Therefore, standard policy shall be to issue the Dam Construction Permit after the SEPA process has been satisfactorily completed. That is, after either a Determination of Non-significance (DNS), a Mitigated DNS, or a Final Environmental Impact Statement (FEIS) has been issued for the project.

The only exception to this policy is where emergency conditions (WAC 197-11-880) warrant that repairs or other construction actions be taken swiftly, to prevent an imminent threat to public health or safety, prevent imminent danger to public or private property, or prevent imminent threat of serious environmental degradation.

DISCUSSION:

This Policy is intended to have DSO actions consistent with SEPA, but to allow for some flexibility in the event of an emergency situation developing at a dam, where SEPA compliance is not practical.

PROCEDURES:

The DSO Project Leader shall coordinate with the Environmental Review Section of the Shorelands and Environmental Assistance (SEA) Program, to ensure that the SEPA process has been completed before approving plans and issuing the Dam Construction Permit.

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Water Resources Program

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POL 5301

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064
Chapter 173-175 WAC

Revised: 07-01-1999

INSPECTION OF CONSTRUCTION WORK

POLICY STATEMENT:

Inspection of construction work for new dams, or for modifications of existing dams, is considered an extension, and an integral part, of the construction permit process. The role of the DSO in conducting construction inspections is clearly defined in WAC 173-175-200.

DISCUSSION:

Inspections are conducted to confirm that assumptions made in the design stage are valid for field conditions and that the facility is constructed in accordance with the approved plans, specifications and accepted engineering and construction standards and practice. These inspections also verify that the inspection work being performed by the owner's agents is in accordance with the DSO approved construction inspection plan (see WAC 173-175-170 and POL 5302).

PROCEDURE:

The Project Leader for a given project is responsible for coordinating all inspection activities for that project. Procedures outlined in the "Ecology Enforcement Manual", Water Resources Section, are to be used where enforcement actions are deemed necessary to obtain compliance of construction work with approved plans and specifications.

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Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064
Chapter 173-175 WAC

Revised: 07-01-1999

CONSTRUCTION INSPECTION PLANS - BY DAM OWNERS

POLICY STATEMENT:

The dam owner, or the engineering consultant acting as representative of the owner, is required under WAC 173-175-170 to submit a plan detailing how construction inspection activities are to be accomplished. Guidance on the required contents of the construction inspection plan is listed in WAC 173-175-170. Guidance on acceptable levels of construction inspection activities is also contained in *Part Two* of the *Dam Safety Guidelines* entitled *Plan Approval*.

PROCEDURES:

The construction inspection plan is to be submitted during the construction permit process and must be approved by the DSO project leader prior to approval of the plans and issuance of the construction permit. (See also Policy 5201)

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POL 5401

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064
RCW 86.16.035
Chapter 173-175 WAC

Revised: 07-01-1999

PERIODIC INSPECTION OF EXISTING DAMS - FEDERAL DAMS

POLICY STATEMENT:

In accordance with WAC 173-175-020(3), dams owned by federal agencies will not be inspected by the Dam Safety Section, provided the federal agency or their designated consultant conducts regular periodic inspections by qualified dam safety engineers.

The DSO will coordinate with the Corps of Engineers and Bureau of Reclamation dam safety programs, and may accompany and assist them on inspections when invited. Also, the DSO may perform inspections of these agencies' dams as needed to provide technical assistance to the State Emergency Management Division, for emergency planning purposes, or in the event of an actual emergency.

Ecology will conduct periodic inspections in those cases where a dam is owned by a federal agency, but regular, periodic inspections are not performed by qualified dam safety engineers.

DISCUSSION:

Historically, Dam Safety Office policy has held that federally owned facilities are exempt from state regulation when the federal agencies have their own dam safety program. In particular, the Corps of Engineers and Bureau of Reclamation provide copies of inspection reports to Ecology, and the Bureau of Reclamation meets with the Dam Safety Office annually to discuss their inspection activities. This policy will, therefore, provide consistency with policy POL 5102 and will prevent redundancy in periodic inspection activity of federally owned and operated dams.

For those dams owned by a federal agency, but not included in a regular periodic inspection program by qualified dam safety engineers, this policy identifies Ecology as the agency responsible for conducting regular periodic inspections.

PROCEDURES:

In those cases where Ecology is responsible for periodic inspections, the inspections will be conducted on a frequency according to Policy POL 5404.

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POL 5402

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office Effective Date: 07-01-91

References: RCW 43.21A.064 Revised: 07-01-1999
RCW 43.21A.068
RCW 86.16.035
Chapter 173-175 WAC
RCW 90.03.350
WAC 508-12-280 through 410 (Repealed 07-01-92)

PERIODIC INSPECTION OF EXISTING DAMS - HYDROPOWER DAMS LICENSED OR EXEMPTED BY FERC

POLICY STATEMENT:

Application of policies to non-federal hydropower dams, licensed or exempted by the Federal Energy Regulatory Commission (FERC), shall be consistent with the provisions of RCW 43.21A.068 and POL 5104.

Specifically, the DSO will not conduct construction or periodic inspections of these projects.

The DSO will be the state repository for the 5-year, part 12 inspection reports submitted to FERC.

Keith E. Phillips
Program Manager
Water Resources Program

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POL 5403

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064(2)
RCW 86.16.035
Chapter 173-175 WAC

Revised: 07-01-1999

PERIODIC INSPECTION OF EXISTING DAMS - ECOLOGY SOLE REGULATORY AGENCY

POLICY STATEMENT

Periodic inspections of existing dams will be conducted on those dams where Ecology is the sole regulatory agency. The frequency of inspections will be based on policy POL 5404.

DISCUSSION:

Direct implementation of RCW 43.21A.064(2), which directs Ecology to inspect the construction and maintenance of all dams to assure safety to life and property.

Keith E. Phillips
Program Manager
Water Resources Program

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Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064
RCW 86.16.035
Chapter 173-175 WAC

Revised: 07-01-1999

FREQUENCY OF PERIODIC DAM INSPECTIONS

POLICY STATEMENT:

Periodic inspections of existing dams should be conducted on regularly scheduled intervals. The time interval between inspections should depend on the dam and reservoir size and the potential downstream hazard posed by the facility. Those dams which reside above populated areas should ideally be inspected on a 6 year cycle. Those dams which do not pose a threat to life can be inspected less frequently.

Should staffing levels be insufficient to inspect all dams under Ecology jurisdiction, the dams will be ranked according to size and downstream hazard and a prioritization scheme will be used to aid in the selection of dams for inspection. Those dams which could pose the greatest threat to life and property will be selected for inspection on regular intervals. The remaining dams would be inspected as the workload and time permit.

DISCUSSION:

Guidelines for dam safety prepared by the Federal Emergency Management Agency recommend annual inspections of high hazard dams (3 or more homes at risk), a 2-year interval for significant hazard dams (1 or 2 homes at risk), and a 5-year interval for low hazard dams (no homes at risk). The Bureau of Reclamation currently inspects their high and significant hazard dams on a 3 year interval for an Operation and Maintenance Inspection, and a 6 year interval for a Comprehensive inspection. Considering the large number of high and significant hazard dams to be inspected by the Dam Safety Section and the limited staffing currently available, a goal of a 6 year comprehensive inspection interval was selected and is considered to provide the minimum acceptable level of protection to the public.

This policy also identifies a longer inspection interval for dams with "low" downstream hazards. The primary reason for inspecting low hazard dams is to evaluate the downstream floodplain for new development. If development has occurred and lives could be at risk by a dam failure, then the inspection frequency should be increased.

Staffing is anticipated to be insufficient for the foreseeable future to meet the desirable goals for frequency of periodic inspections. This policy identifies that a ranking and prioritization scheme is to be used to aid in the selection of projects to be inspected with available workforces.

PROCEDURES:

The physical characteristics of dam size, reservoir storage and magnitude of a dam break flood are to be used to assess the consequences of dam failure on lives and property in the downstream valley. This information is to be used to rank the dams according to their potential public safety threat if a dam failure were to occur.

A prioritization scheme is to be used to aid in the selection of dams for inspection from the ranked dam listing. Those dams which could pose the greatest threat to life and property will be selected for inspection on regular intervals. The remaining dams would be inspected as the workload and time permit.

The following periodic inspection schedule is a minor modification of the schedule that was reviewed and accepted by the Ecology Executive Management Team during the 1991 Strategic Budget Planning Process. Table 1 outlines the general format for conducting the periodic inspection program.

Keith E. Phillips
Program Manager
Water Resources Program

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PERIODIC INSPECTION CLASSIFICATIONS

TYPE	PURPOSE	USAGE	DESCRIPTION
CLASS I	COMPREHENSIVE INSPECTION	First Periodic Inspection	Visual inspection of all project elements; Detailed engineering analysis of project elements under extreme flood and earthquake; Prepare comprehensive report of findings.
CLASS II	INTERMEDIATE LEVEL INSPECTION	Subsequent Periodic Inspections	Visual inspection of all project elements; Some engineering analysis of selected elements; Prepare summary report of findings.
CLASS III	RECONNAISSANCE INSPECTION	Preliminary Inspection	Visual inspection of most project elements; Minimal engineering analyses; Prepare memo to file summarizing inspection.

PRIORITIZATION SCHEME FOR PERIODIC INSPECTION OF EXISTING DAMS

DOWNSTREAM HAZARD CLASSIFICATION	CYCLE	NUMBER OF DAMS	INSPECTIONS	
			NUMBER /YEAR	TYPE
FIRST TIER				
High Downstream Hazard Dams (Downstream Hazard Class 1A, 1B, 1C)	6 years	111	18	Class I or II
Significant Downstream Hazard Dams (Downstream Hazard Class 2) Greater than 20 ft. high	8 years	75	9	Class I or II
SECOND TIER				
Significant Downstream Hazard Dams (Downstream Hazard Class 2) 				

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064
RCW 43.27A.190
RCW 90.03.350
Chapter 173-175 WAC

Revised: 07-01-1999

DAMS CONSTRUCTED WITHOUT PRIOR DSO APPROVAL OF PLANS AND SPECIFICATIONS (RECENT CONSTRUCTION)

POLICY STATEMENT:

Any dam which has been recently constructed without prior approval of construction plans and specifications and without DSO construction inspections is in violation of RCW 90.03.350 and will be presumed to be a public nuisance. The owner will not be allowed to fill the reservoir until the structural integrity and safety of the facility can be demonstrated to the satisfaction of the DSO. As-Built drawings will be required from the owner to document the layout of the project, but no DSO "Approved for Construction" Stamp will be issued for As-Built plans in this situation (Policy POL 5205).

The applicable regional office of Water Resources will be notified about the existence of the structure. The DSO will coordinate actions with the regional office to assure that both safety and water right concerns are addressed.

DISCUSSION:

This is a direct implementation of RCW 90.03.350 and WAC 173-175-620(2). No facility should be allowed to be put in service which has unknown or unverified structural integrity. Likewise, issues related to water rights must be resolved prior to allowing the facility to be put in service.

PROCEDURES:

The owner of the facility will be informed that the reservoir cannot be filled until the safety of the structure has been adequately demonstrated and the water rights issues are resolved. If the owner does not voluntarily comply with the reservoir filling restriction, a regulatory order and/or fines will be issued in accordance with RCW 43.27A.190, citing violation of RCW 90.03.350, and precluding the owner/operator from filling the reservoir.

The DSO will proceed as described below and shown in Figure 1 to resolve the problem.

Step 1. The DSO will conduct a surficial inspection of the facility and review available plans and construction documentation to assess the seriousness of any deficiencies.

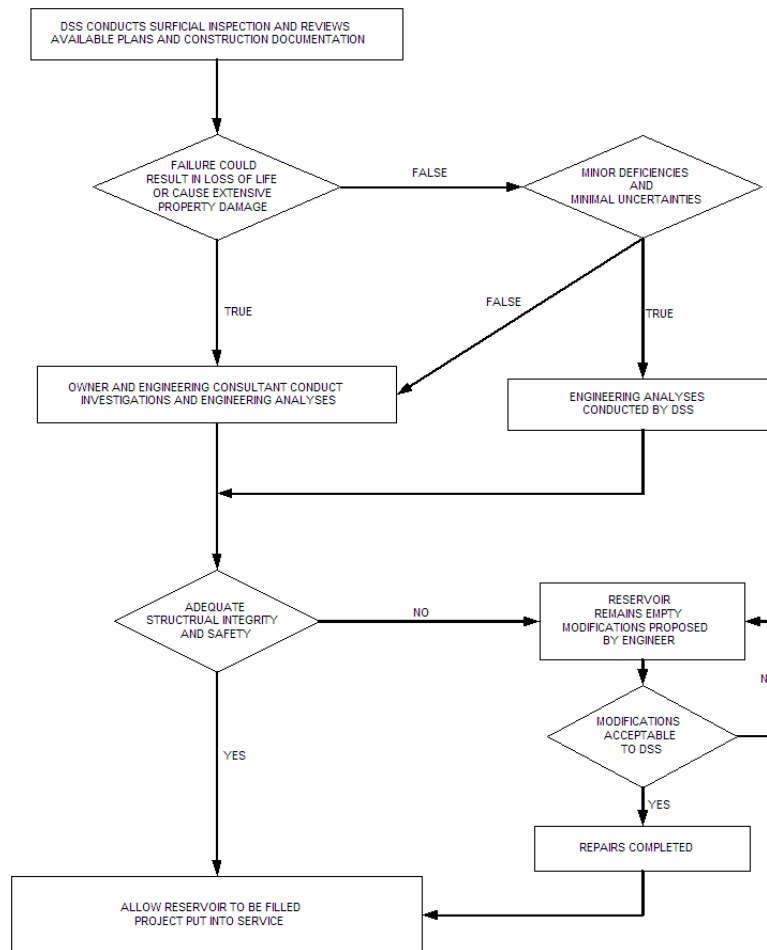
Step 2.

Case 1. If deficiencies are of a minor nature and a failure of the facility would not pose a threat to loss of life or result in extensive property damage then - in the interests of reducing the DSO time commitment, the DSO will conduct simplified analyses and notify the owner of any safety deficiencies.

Case 2. In all other cases, it will be the responsibility of the owner and his engineering consultant to conduct sufficient investigations and analyses to either demonstrate the structural adequacy of the facility or alternatively to propose modifications for repair of safety deficiencies.

In all cases, as-built drawings should be provided by the owner to document the geometry and construction details.

FIGURE 1. FLOWCHART FOR DSO PROCEDURES: DAMS CONSTRUCTED WITHOUT PRIOR APPROVAL



Keith E. Phillips
Program Manager
Water Resources Program

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POL 5406**WATER RESOURCES PROGRAM POLICY**

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064

Revised: 07-01-1999

**"OLDER" DAMS WHICH WERE CONSTRUCTED MANY YEARS AGO WITHOUT DSO
APPROVAL OF PLANS AND SPECIFICATIONS****POLICY STATEMENT:**

When an older dam is found which has been in service for a number of years, but which was constructed without prior approval of construction plans and specifications and without DSO construction inspection, a surficial inspection will be conducted to assess the structural integrity and safety of the facility. If the findings from the inspection indicate that there are serious problems which **must** be addressed in a timely manner, then the DSO will proceed with compliance and enforcement actions as indicated in Policy POL 5502. If no major problems are identified, the owner will be advised of the findings from the inspection and the project will be scheduled to receive periodic inspections according to policy POL 5404.

DISCUSSION:

This is a companion policy to POL 5405 and differs from that policy in that it addresses older dams, which have been in service for several years. Many safety deficiencies on dams in service, which may have arisen from design or construction flaws, can be detected by visual examination and preliminary engineering analyses. This allows an approach to assessing the safety of the facility, which is not available for dams that have recently been constructed but not yet placed in service. (Policy POL 5405)

APPLICABILITY:

This policy applies on existing dams where steady state seepage conditions have developed. Policy POL 5405 is applicable for recently built dams where the reservoir has not been filled or where steady state seepage conditions have not yet developed.

Keith E. Phillips
Program Manager
Water Resources Program

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POL 5407**WATER RESOURCES PROGRAM POLICY**

Resource Contact: Dam Safety Office

Effective Date: 07-01-1999

References: RCW 78.56.070
RCW 90.03.350

Revised:

PERIODIC INSPECTIONS OF METALS MINING TAILINGS IMPOUNDMENTS**POLICY STATEMENT:**

Periodic inspections of tailings dams at metal mining and milling operations regulated under Chapter 232, Laws of 1994 shall be performed annually by DSO engineers during project operation, during temporary project shutdowns, and during the post-closure monitoring period.

DISCUSSION:

RCW 90.03.350 and RCW 78.56.070 collectively require a total of 4 (quarterly) dam safety inspections by Ecology per year of tailings impoundments associated with operating metals mining and milling operations, and annual dam safety inspections at closed facilities. Also, RCW 78.56.070(2) encourages state agencies with inspection responsibilities to cross-train inspectors to perform multi-media inspections at these facilities. Ecology Air-Quality and Water Quality staffs have received cross training on dam safety, to allow them to perform dam inspections as part of their quarterly inspections at operating mining facilities. Considering the heavy inspection workload in the Dam Safety Office, and the slow rate at which typical tailings impoundments are filled, it was evident that quarterly inspections by dam safety engineers would be excessive. Thus, it was concluded that inspections by DSO engineers only need to be performed once annually on both operating and non-operating metals mining tailings impoundments, with the remaining three quarterly inspections performed by Ecology staff in other programs.

PROCEDURES:

DSO staff will schedule an annual inspection trip to all operating and closed metals mine tailings dams. The DSO supervisor will document these inspections with a memorandum to file. The DSO supervisor will also coordinate with the other Ecology programs involved in inspecting metals mining facilities to obtain copies of their quarterly inspection reports.

Keith E. Phillips
Program Manager
Water Resources Program

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POL 5501

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064
RCW 43.27A.190
Chapter 173-175 WAC

Revised: 07-01-1999

ENFORCEMENT GUIDELINES AND PROCEDURES

POLICY STATEMENT:

All enforcement actions are to be taken in accordance with provisions of WAC 173-175-620 and procedures identified in the Water Resources section of the current version of the "Washington State Dept. of Ecology Compliance Assurance Manual".

Keith E. Phillips
Program Manager
Water Resources Program

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POL 5502

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064
RCW 43.27A.190

Revised: 07-01-1999

USE OF ENFORCEMENT ACTION WHEN VOLUNTARY COMPLIANCE IS NOT FORTHCOMING

POLICY STATEMENT:

Voluntary compliance should be pursued as a first course in correcting safety deficiencies on a given project. If a determination is made that corrections will not be forthcoming in a reasonable period of time, enforcement actions should be considered.

Selection of a project for enforcement action should be considered based on the consequences of failure and the seriousness of the safety deficiencies.

A numerical ranking and prioritization scheme is to be used to aid in the selection of projects for enforcement action. The prioritization scheme should be based on the hazard posed by the project and the seriousness of the safety deficiencies.

DISCUSSION:

At the present time, the legal and administrative time required to bring about compliance on the large number of projects with safety deficiencies far exceeds the staff time available. A prioritization scheme is needed to help identify those projects which pose the greatest threat to public safety. These high priority projects should be targeted for enforcement action.

PROCEDURES:

The prioritization algorithm developed for the compliance tracking data base is to be used to provide guidance in selection of projects for enforcement action. This prioritization algorithm is contained within in the DSO computer Database. The numbers of projects targeted for enforcement action at any given time should be chosen to maximize compliance while not jeopardizing other critical functions of the Dam Safety Office. This generally represents an active enforcement workload of about 10 projects.

Keith E. Phillips
Program Manager
Water Resources Program

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POL 5601**WATER RESOURCES PROGRAM POLICY**

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064
RCW 86.16.035
Chapter 173-175 WAC

Revised: 07-01-1999

OPERATION AND MAINTENANCE MANUALS AND EMERGENCY ACTION PLANS FOR EXISTING DAMS**POLICY STATEMENT:**

As described in WAC 173-175-510, owners are required to develop an Operation and Maintenance (O&M) Manual, within 180 days following completion of a periodic inspection by the DSO. For those facilities whose failure could result in loss of life or cause extensive damage to property or interruption of critical services to a community, an Emergency Action Plan must also be submitted within 180 days following completion of a periodic inspection by the DSO.

For new construction and for modifications of existing dams, O&M Plans and EAPs will be required prior to authorizing commencement or resumption of project operation (see WAC 173-175-240 and Policy POL 5201).

Basic emergency procedures should be developed for those facilities where a failure would cause limited property damage but no loss of life is expected. It is recommended that these procedures be incorporated into the Operation and Maintenance Manuals.

DISCUSSION:

Both Operation and Maintenance (O&M) Manuals and Emergency Action Plans (EAPs) are considered important elements for proper and safe operation of an impounding facility. Current staffing levels limit the ability of the DSO to properly regulate these activities. However, the importance of these activities warrants that the owner of the facility be required to develop these plans. The EAP is particularly important where there is the potential for loss of life, extensive property damage, or disruption of critical services to the community in case of dam failure.

PROCEDURES:

The DSO will provide facility owners with information and guidance on the development of O&M Manuals and EAPs during the planning stage for new facilities or the modification of existing facilities. Owners will be directed to contact their county emergency services representatives for assistance in developing and review the EAPs.

For existing dams, O&M plans and EAPs will be reviewed as part of the periodic inspection process and required to be completed within 180 days following completion of a periodic inspection by the DSO. “Completion of a periodic inspection” is defined as the date the letter transmitting the DSO periodic inspection report is received by the project owner.

Keith E. Phillips
Program Manager
Water Resources Program

Resource Contact: Dam Safety Office

Effective Date: 06-01-93

References: RCW 86.16.035
Chapter 173-175 WAC
Dam Safety Guidelines

Revised: 07-01-1999

EMERGENCY SPILLWAY REQUIREMENTS AT OFF-CHANNEL STORAGE FACILITIES

POLICY STATEMENT:

Emergency spillways are required at all off-channel storage facilities regulated as dams by the Dam Safety Office.

There are two cases where this policy may be waived. The first case is for projects such as mine tailings facilities, where the reservoir storage capacity and associated freeboard are sufficient to contain several years of reservoir inflow from process waters and natural sources. An emergency spillway would not be needed during the project phase where excess storage capacity would be available.

The second case is for facilities which have all of the following:

- full time operators; and
- sufficient storage capacity to accommodate 3 days of process water inflow at the maximum rate plus the natural inflow from the design storm; and
- have permanent outlet works with discharge capacity in excess of the maximum combined inflow from process water and natural sources.

The primary considerations in determining emergency spillway requirements will be the consequences of a failure of the impounding barrier and the likely reliability of appropriate and timely response by the project operator in recognizing and responding to a high pool condition.

DISCUSSION:

The requirement for an emergency spillway at an off-channel storage facility has sometimes caused concern to Ecology Water Quality staff and to facility owners. The principal concern regards the situation where a release could be a violation of water quality standards.

The basic philosophy behind this requirement is that it is better to release a small amount through the spillway, than run the risk of embankment failure from overtopping and releasing the entire reservoir contents.

It should be noted that the Natural Resources Conservation Service, Environmental Protection Agency and Nuclear Regulatory Commission also require emergency spillways at projects where the reservoir contents pose environmental concerns.

PROCEDURES:

The decision on the need for an emergency spillway will be made on a case by case basis by the project leader and the DSO supervisor. Selection of a frequency of operation for the emergency spillway will be made through consultation with Ecology Water Quality staff.

Keith E. Phillips
Program Manager
Water Resources Program

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POL 5701

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Office

Effective Date: 07-01-91

References: RCW 43.21A.064
RCW 86.16.035

Revised: 07-01-1999

EMERGENCY RESPONSE PROCEDURES BY DAM SAFETY OFFICE

POLICY STATEMENT:

A manual entitled *Dam Safety Emergency Procedures* will be maintained identifying appropriate procedures, agency protocols, etc. to be followed in response to emergency situations on dams where there is a potential for loss of life.

PROCEDURES:

The manual will be updated as needed to reflect current conditions, policies, protocols, etc.

Keith E. Phillips
Program Manager
Water Resources Program

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DISCRETIONARY ACTIONS DURING EMERGENCY OR EXIGENCY SITUATIONS

Resource Contact: Dam Safety Section

Effective Date: 07-01-91

Revised: 07-01-99

References: RCW 43.21A.064
RCW 86.16.035
Chapter 173-175 WAC

POLICY STATEMENT:

As described in WAC 173-175-610, actions may be taken by Dam Safety Office professional engineers as deemed necessary to respond to emergency or exigency situations to protect life and property. Where possible, actions and decisions should be in conformance with normal Program Policies. However, discretion may be used as needed, in the judgement of the responding professional engineer, to best meet site specific conditions.

The responding professional engineer has delegated signature authority to authorize up to \$10,000.00 per day for expenses incident to responding to the emergency.

DISCUSSION:

Under current Ecology policy, Program Managers have signature authority for up to \$10,000.00 per day for expenditures. By this policy, the Program Manager has delegated that authority to the professional engineer responding to the emergency.

PROCEDURES:

Where time permits, those potential actions which may vary from standard DSO or Water Resources Program Policy should be approved by the Operations Support Section Supervisor.

Where time permits, the responding professional engineer should notify the Section Supervisor, the Program Manager and the supervisor for the Water Resources Budget of the planned expenditure.

Keith E. Phillips
Program Manager
Water Resources Program

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POL 5801

WATER RESOURCES PROGRAM POLICY

Resource Contact: Dam Safety Section

Effective Date: 07-01-91

References:

Revised:

COORDINATION WITH ECOLOGY WATER QUALITY FINANCIAL ASSISTANCE PROGRAM

PROCEDURE:

Coordination on Dam Safety Program Financial Assistance Program (WQFAP) is to be conducted according to the procedures outlined in the July 1990 Memorandum of Agreement between the WQFAP and the Dam Safety Section. That agreement is listed below.

Hedia Adelsman
Program Manager
Water Resources Program

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